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Moris Dovek

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT

PAPER NUMBER

2627

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DELIVERY MODE

10/20/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/781,000	Applicant(s) DOVEK ET AL.	
	Examiner William J. Klimowicz	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1,3,4,19,21 and 22 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1,3,4,19,21 and 22 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Status

Claims 1, 3, 4, 19, 21 and 22 are currently pending.

Claims 2, 5-18, 20 and 23-36 have been canceled.

Claim Objections

Claims 3 and 21 are objected to because of the following informalities:

With regard to claims 3 and 21, the status identifier “(CURRENTLY AMENDED)” should be changed to the status identifier --(PREVIOUSLY PRESENTED)--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A).

As per claims 1 and 19, Carpenter et al. (WO 98/20485 A1) discloses a crosstalk and EME (electromagnetic emission) minimizing trace suspension assembly structure (16) and a method thereof, comprising: multiple write lines (e.g., 60, 62) which are crossed between a

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preamplifier connection point (at 54) and slider write contact pads (22) (e.g., see, *inter alia*, page 7, line 12-23 and page 8, lines 20-29); multiple read lines (e.g., 60, 62 - see in particular page 8, lines 21-25) driven by preamplifier circuits (including 54); the aforementioned slider contact pads (22), which connect said write lines (60, 62) to said trace suspension assembly (16); the aforementioned slider contact pads (22), which connect said read lines (another set of service lines (60, 62) to said trace suspension assembly (16); and multiple write line driven by preamplifier circuits (at 54 via the semiconductor IC chip), wherein said multiple write lines which are crossed between said preamplifier connection point and said slider contact pads are used to cancel out time-delayed (transmission line effects) parts of said crosstalk and said EME, which inherently cancels out crosstalk, due to the effective “twisting” structure of the traces, wherein said write lines (60, 62) have parasitic capacitance between the write lines and the read lines (another set of service lines (60, 62), due to the intrinsic metal-dielectric-metal structure), wherein said parasitic capacitances between the write lines (60, 62) and read lines (other set of service lines, 60, 62) are used to cancel crosstalk noise between said write lines and said read lines due to the effective “twisting” structure of the traces.

As per claims 3 and 21, wherein said crossing point of said write line (60, 62) is made by the addition of a second metallization layer (e.g., 60A or 62A) onto said trace suspension assembly STRUCTURE (16).

As per claims 4 and 22, wherein multiple crossing points of said write lines are used to further cancel out time-delayed (transmission line effects) parts of said crosstalk and EME (based on the crossover structure of the lines (60, 62)).

As per claims 1 and 19, Carpenter et al. (WO 98/20485 A1) does not expressly disclose a single crossing point of said write lines between said preamplifier connection point and said slider contact pads (22) as being placed halfway between said preamplifier connection point and said slider contact pads - e.g., note the phrase “a single crossing point” requires just a crossing at the midpoint, but does not preclude other crosses of the wiring - e.g., see Appellant’s claims 4 and 22, which depend from claims 1 and 19, respectively, and which recite “multiple crossing points.”

Murata et al. (JP 06-342858 A), however, discloses an integrated circuit chip, wherein the signal lines (1, 2) between the IC chip (7) and the termination pads (3, 4) are crossed halfway between the IC chip and the termination pads (3, 4). Murata et al. (JP 06-342858 A), as readily depicted in FIG. 2, illustrates the advantages to such symmetrical midpoint crossing, (i.e., a crossing at a half point between the lines (1, 2)), stating in paragraph [0010] of the enclosed English translation (provided by the USPTO STIC Library and enclosed herewith):

In the following, an explanation will be given regarding the operation in this application example with reference to Figure 2. As shown in the figure, currents I1, I2 flow in opposite directions on signal transmission lines (1), (2) crossing each other via glass film (8), respectively. On one side (left side in the figure) of the crossing portion between signal transmission lines (1), (2), magnetic field M1a generated by current I1 and magnetic field M1b generated by current I2 are in the direction where they strengthen each other, and synthetic magnetic field M1b is generated in the downward direction. On the other side (right side in this figure) of the crossing portion of signal transmission lines (1), (2), magnetic field M2a generated by current I1 and magnetic field M2b generated by current I2 are generated and they strengthen each other, so that synthetic magnetic field M2 is generated in the upward direction. That is, synthetic magnetic field M1 and synthetic magnetic field M2 are in directions that cancel each other. As a result, for the overall integrated circuit, ***the magnetic fields are canceled equivalently***, and the magnetic field emitted from the integrated circuit can be suppressed. Consequently, the electromagnetic noise emission characteristics can be improved. [Emphasis added].

Note that the differential current signals (I1 and I2) correspond directly to the differential current signals W- and W+ or R+ and R- of the disclosed Appellant's invention.

Can these magnetic fields (M1 and M2) within Murata et al. (JP 06-342858 A) be canceled equivalently (i.e., equal cancellation) at some arbitrary crossing point between the wires? Certainly not. As is evidenced by Murata et al. (JP 06-342858 A) in each and every instance all the depicted embodiments, the crossing point is indeed halfway and symmetric in order to balance out the opposing magnetic fields generated by each side of the crossing point. More to the point, however, is the known Biot-Savart Law in physics, as it relates magnetic fields to the currents which are their sources. See Fundamentals of Physics (Halliday and Resnick, Copyright 1981 by John Wiley & Sons, Inc.) at pages 557-558, enclosed herewith.

In scalar format, the Biot-Savart Law can be written as:

$$dB = \frac{\mu_0}{4\pi} \frac{Idl \sin \theta}{r^2} \Rightarrow B = \int \frac{\mu_0}{4\pi} \frac{Idl \sin \theta}{r^2}$$

Where I is the current,

dl is a the magnitude in the length of the differential element of the wire,

dB is the differential contribution to the magnetic field resulting from the differential element of wire, and B is the summed magnetic field over the entire length of the wire,

μ_0 is the magnetic constant,

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r is the distance from the wire element to the point at which the magnetic field is being calculated.

The point to be made here is that the strength of the magnetic field B associated with a *finite* length of wire l , is directly proportional to the length of wire l . More to the point, for a non-infinite or short length of wire carrying a current which generates a magnetic field, the longer the wire, the stronger the magnetic field B contributed by that length of wire.

Turning now to Figure 2 of Murata et al. (JP 06-342858 A), the wires (1, 2), prior to crossing at (8) (i.e., the left side of the crossing point (8)), generate a composite or synthetic magnetic field downward ($M1$) due to Fleming's Right-Hand rule (right-hand thumb points in direction of current, fingers wrap-around the wire and represent the conventional magnetic field direction associated with such a directional current). Thus, the contribution of the current $I1$ and $I2$ in the wires (1,2) on the left side of Figure 2 of Murata et al. (JP 06-342858 A) prior to the crossing point at (8) (fields $M1a$ and $M1b$), add to produce a downward magnetic field vector, designated by $M1$ between the wires.

Conversely, the contribution of the current $I1$ and $I2$ in the wires (1,2) on the right side of Figure 2 of Murata et al. (JP 06-342858 A) after the crossing at (8) (fields $M2b$ and $M2a$), add to produce an upward magnetic field vector, designated by $M2$ between the wires.

Are these magnetic field vectors ($M1$ and $M2$) canceled equivalently at just any crossing point of the wires? Absolutely not. For example, if the length of the wires (1, 2) at the left-side of the crossing point (8) were longer relative to the length of the wires (1, 2) to the right of the crossing point in Figure 2 of Murata et al. (JP 06-342858 A) (that is, if Figure 2 of Murata et al. (JP 06-342858 A) were altered such that the crossing point at (8) actually occurred farther to the

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right-side of Figure 2), the magnetic fields vectors (M1, M2) would still indeed point in opposite directions, *but the magnetic field vector M1 would be greater in magnitude than the upward pointing vector M2*, since the contribution to the magnetic field M1 by the currents (I1 and I2) in the longer wires (1, 2) at the left-side of the crossing point (8) would yield a larger downward magnetic field magnitude (B) between the longer wires (1, 2) on the left side of the hypothetically moved crossing point, as shown by the Biot-Savart Law.

Additionally, in the above described hypothetical alteration of the depictions of Murata et al. (JP 06-342858 A), if the length of the wires (1, 2) at the right-side of the crossing point (8) were shorter relative to the length of the wires (1, 2) to the left of the crossing point in Figure 2 of Murata et al. (JP 06-342858 A), the *magnetic field vector M2 would be smaller in magnitude than the downward pointing vector M1*, since the contribution to the magnetic field M2 by the currents (I1 and I2) in the shorter wires (1, 2) at the right-side of the moved crossing point (8) would yield a smaller magnetic field magnitude (B) between the shortened wires (1, 2) on the right side of the hypothetically moved crossing point, as shown by the Biot-Savart Law.

Therefore, in this hypothetical alteration of the embodiments disclosed by Murata et al. (JP 06-342858 A) in which the crossing point is moved from the midpoint to, e.g., the right, while there would indeed be some cancelling of the vector strength of M1, there would still be an overall magnetic field vector M1 that points downward.

In Murata et al. (JP 06-342858 A), however, the “***magnetic fields are canceled equivalently***” as expressly stated and depicted in all embodiments of Murata et al. (JP 06-342858 A)). See, e.g., paragraph [0010] of the enclosed STIC translation of Murata et al. (JP 06-342858

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A). See also, page 7 at line 18, wherein it is also expressly stated that due to the crossing of wires (1, 2), “the overall magnetic field is canceled.”

Clearly, it is no accident that each and every embodiment (Figure 6 is prior art) of Murata et al. (JP 06-342858 A) clearly and unquestionably depicts the crossing point of the wires (1, 2) as halfway between their respective endpoints.

Thus, given the express teachings and disclosures of Murata et al. (JP 06-342858 A) and Carpenter et al. (WO 98/20485 A1), it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a crossing point of said write lines between said preamplifier connection point and said slider contact pads of Carpenter et al. (WO 98/20485 A1) as placed halfway between said preamplifier connection point and said slider contact pads, as exemplified and taught by Murata et al. (JP 06-342858 A) - note also that Murata et al. (JP 06-342858 A) further suggest that more than one crossing is suitable, a la Carpenter et al. (WO 98/20485 A1). See paragraph [0016] of Murata et al. (JP 06-342858 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a crossing point of said write lines between said preamplifier connection point and said slider contact pads of Carpenter et al. (WO 98/20485 A1) as placed halfway between said preamplifier connection point and said slider contact pads, as exemplified and taught by Murata et al. (JP 06-342858 A) - note also that Murata et al. (JP 06-342858 A) further suggest that more than one crossing is suitable, a la Carpenter et al. (WO 98/20485 A1) -see paragraph [0016] of Murata et al. (JP 06-342858 A)) in order to achieve the predictable result of providing a field which *is negated equivalently (i.e., symmetrically at a midway point of a single crossing)*,

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whereby “the electromagnetic noise emission characteristics can be improved.” See paragraph [0011] of Murata et al. (JP 06-342858 A).

As per the claimed invention, “in order to cancel out said crosstalk and said EME wherein said write lines have parasitic capacitance between the write lines and the read lines, wherein said parasitic capacitances between the write lines and read lines are used to cancel crosstalk noise between said write lines and said read lines,” is merely functional, intended use language, and does not in any way distinguish from the structure/method shown by the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A).

More specifically, the Examiner notes that the amended phrase is an intended “use” limitation provided in a claim written in structural terms and the manipulation of such structure (method claim 19). “[A]pparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1468 [15 USPQ2d 1525] (Fed. Cir. 1990).

Additionally, claims 1 and 19 are seen to be met by the combined structure and manipulation of such structure, of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A) since there is no *structural* or manipulative difference between the claims and Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A). As has been widely held in patent law, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of

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performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Since the claimed structure and manipulation of such is identically met by the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A), as shown by the Examiner, and as affirmed by the U.S. Board of Patent Appeals and Interferences (see decision rendered on February 22, 2011), the Examiner notes that the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A) is inherently capable of performing the positive functional language set forth in the claimed invention.

. Additionally, it has been held that to be entitled to weight in method claims, the recited structure limitations therein must affect the method in a manipulative sense, and not amount to the mere claiming of a use of a particular structure. *Ex parte Pfeiffer*, 135 USPQ 31 (BPAI 1961).

The following 35 USC 103(a) rejections are being made in light of a recent Supreme Court opinion.

The Supreme Court has issued its opinion in *KSR*, regarding the issue of obviousness under 35 U.S.C. 5 103(a) when the claim recites a combination of elements of the prior art. *KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ 2d 1385 (U.S. 2007).

In the decision, the Court reaffirmed the Graham factors in the determination of obviousness under 35 U.S.C. 5 103(a), inclusive of the four factual inquiries under Graham, which are:

(a) determining the scope and contents of the prior art;

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- (b) ascertaining the differences between the prior art and the claims in issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459,467 (1966).

It is noted that the Court did not totally reject the use of “teaching, suggestion, or motivation” as a factor in the obviousness analysis. Rather, the Court recognized that a showing of “teaching, suggestion, or motivation” to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. 103(a).

More noteworthy, however, the Court rejected a rigid application of the “teaching, suggestion, or motivation” (TSM) test, which required a showing of some teaching, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the prior art elements in the manner claimed in the application or patent before holding the claimed subject matter to be obvious.

The Court noted that the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and that it was “important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements” in the manner claimed.

The Court specifically stated:

Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an ***apparent reason*** to combine the known elements in the fashion claimed

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by the patent at issue. To facilitate review, this analysis *should be made explicit*. *KSR*, at 1396.

Moreover, the Supreme Court also held in *KSR*, that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1395.

Response to Arguments

Applicant's arguments filed September 12, 2011 have been fully considered but they are not persuasive.

The Applicant alleges that the Applicant's invention differs from either Carpenter et al. (WO 98/20485 A1) or Murata et al. (JP 06-342858 A), alone or in combination, based on the stated problem achieved by the claimed structure.

As set forth in the rejection, *supra*, the Examiner notes that Carpenter et al. (WO 98/20485 A1) in combination with Murata et al. (JP 06-342858 A) discloses all features of the claimed structure, including an express rationale for combining Murata et al. (JP 06-342858 A) with Carpenter et al. (WO 98/20485 A1).

As per the claimed invention, “in order to cancel out said crosstalk and said EME wherein said write lines have parasitic capacitance between the write lines and the read lines, wherein said parasitic capacitances between the write lines and read lines are used to cancel crosstalk noise between said write lines and said read lines,” is merely functional, intended use language, and does not in any way distinguish from the structure/method shown by the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A).

More specifically, the Examiner notes that the amended phrase is an intended “use” limitation provided in a claim written in structural terms and the manipulation of such structure (method claim 19). “[A]pparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1468 [15 USPQ2d 1525] (Fed. Cir. 1990).

Additionally, claims 1 and 19 are seen to be met by the combined structure and manipulation of such structure, of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A) since there is no *structural* or manipulative difference between the claims and Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A). As has been widely held in patent law, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Since the claimed structure and manipulation of such is identically met by the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A), as shown by the Examiner, and as affirmed by the U.S. Board of Patent Appeals and Interferences (see decision rendered on February 22, 2011), the Examiner notes that the combination of Carpenter et al. (WO 98/20485 A1) in view of Murata et al. (JP 06-342858 A) is inherently capable of performing the positive functional language set forth in the claimed invention.

Additionally, it has been held that to be entitled to weight in method claims, the recited structure limitations therein must affect the method in a manipulative sense, and not amount to

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the mere *claiming of a use* of a particular structure. *Ex parte Pfeiffer*, 135 USPQ 31 (BPAI 1961).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM J. KLIMOWICZ whose telephone number is (571)272-7577. The examiner can normally be reached on Monday-Friday (7:30AM-6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WILLIAM J KLIMOWICZ/
Primary Examiner, Art Unit 2627